

HALL TICKET NO.

3150212

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V. RAJENDER

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**(CSE) COMPUTER SCIENCE AND ENGINEERING**  
**INSTRUCTIONS TO CANDIDATES**

1. Candidates should write their Hall Ticket Number only in the space provided at the top left hand corner of this page, on the leaflet attached to this booklet and also in the space provided on the OMR Response Sheet. **BESIDES WRITING, THE CANDIDATE SHOULD ENSURE THAT THE APPROPRIATE CIRCLES PROVIDED FOR THE HALL TICKET NUMBERS ARE SHADED USING BALL POINT PEN (BLUE/BLACK) ONLY ON THE OMR RESPONSE SHEET. DO NOT WRITE HALL TICKET NUMBER ANY WHERE ELSE.**
2. Immediately on opening this Question Paper Booklet, check:
  - (a) Whether 200 multiple choice questions are printed (50 questions in Mathematics, 25 questions in Physics, 25 questions in Chemistry and 100 questions in Engineering)
  - (b) In case of any discrepancy immediately exchange the Question paper Booklet of same code by bringing the error to the notice of invigilator.
3. Use of Calculators, Mathematical Tables and Log books is not permitted.
4. Candidate must ensure that he/she has received the Correct Question Booklet, corresponding to his/her branch of Engineering.
5. Candidate should ensure that the booklet Code and the Booklet Serial Number, as it appears on this page is entered at the appropriate place on the OMR Response Sheet by shading the appropriate circles provided therein using Ball Point Pen (Blue/Black) only. Candidate should note that if they fail to enter the Booklet Serial Number and the Booklet Code on the OMR Response Sheet, their Answer Sheet will not be valued.
6. Candidate shall shade one of the circles 1, 2, 3 or 4 corresponding question on the OMR Response Sheet using Ball Point Pen (Blue/Black) only. Candidate should note that their OMR Response Sheet will be invalidated if the circles against the question are shaded using pencil or if more than one circle is shaded against any question.
7. One mark will be awarded for every correct answer. There are no negative marks.
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  - (c) Adopts any other malpractice.
9. Rough work should be done only in the space provided in the Question Paper Booklet.
10. No loose sheets or papers will be allowed in the examination hall.
11. Timings of Test: 10.00 A.M. to 1.00 P.M.
12. Candidate should ensure that he / she enters his / her name and appends signature on the Question paper booklet, leaflet attached to this question paper booklet and also on the OMR Response Sheet in the space provided. Candidate should ensure that the invigilator puts his signature on this question paper booklet, leaflet attached to the question paper booklet and also on the OMR Response Sheet.
13. Before leaving the examination hall candidate should return both the OMR Response Sheet and the leaflet attached to this question paper booklet to the invigilator. Failure to return any of the above shall be construed as malpractice in the examination. **Question paper booklet may be retained by the candidate.**
14. This booklet contains a total of 32 pages including Cover page and the pages for Rough Work.

**Note: (1) Answer all questions.**

- (2) Each question carries 1 mark. There are no negative marks.
  - (3) Answer to the questions must be entered only on OMR Response Sheet provided separately by completely shading with Ball Point Pen (Blue/Black), only one of the circles 1, 2, 3 or 4 provided against each question, and which is most appropriate to the question.
  - (4) The OMR Response Sheet will be invalidated if the circle is shaded using pencil or if more than one circle is shaded against each question.

## MATHEMATICS

8. A sphere of radius 10 cm shrinks to 9.8 cm. The approximate decrease in volume in cubic centimeters is  
 (1)  $80\pi$       (2)  $20\pi$       (3)  $60\pi$       (4)  $40\pi$
9. If  $z = f(x+ct) + \phi(x-ct)$ , then  $\frac{\partial^2 z}{\partial t^2} - c^2 \frac{\partial^2 z}{\partial x^2} =$   
 (1)  $f''(x+ct) + \phi''(x-ct)$       (2)  $f''(x+ct) - \phi''(x-ct)$   
 (3)  $t^2 + c^2$       (4) 0
10. If  $u = \sin^{-1} \frac{(x^2+y^2)}{(x+y)}$ , then  $x \frac{\partial u}{\partial x} + y \frac{\partial u}{\partial y} =$   
 (1)  $\tan u$       (2)  $\sin u$       (3)  $\cos u$       (4)  $2 \cot u$
11.  $\int \frac{\sin x + \cos x}{\sqrt{1 + \sin 2x}} dx =$   
 (1)  $\sin x - \cos x + c$       (2)  $\cos 2x + c$   
 (3)  $\sin 2x + c$       (4)  $x + c$
12.  $\int_0^{\infty} \frac{dt}{t^2 + 2t + 2}$   
 (1)  $\pi/2$       (2)  $\pi/4$       (3) 0      (4)  $1/2$
13.  $\int e^x \frac{(1+x \log x)}{x} dx =$   
 (1)  $x e^x \log x + c$       (2)  $x \log x + c$   
 (3)  $e^x \log x + c$       (4)  $-x \log x + e^x + c$
14.  $\int_{-2}^2 (4x + 3x^2 + 7x^5 + 12x^7) dx =$   
 (1) 432      (2) 516      (3) 1132      (4) 16

15. The limit as  $n$  tends to infinity of the series  $\frac{1}{n+1} + \frac{1}{n+2} + \frac{1}{n+3} + \dots + \frac{1}{2n}$  is  
 (1)  $\log 2$       (2) 4      (3)  $\frac{1}{2}$       (4) 1
16. The area included under  $x+y=2$  and the co-ordinate axis is  
 (1) 8 units      (2) 4 units      (3) 2 units      (4) 1 unit
17. The volume of solid of revolution in cubic units when  $y = 4$  is rotated about  $x$ -axis between  $(0, 0)$  and  $(0, 4)$   
 (1)  $64\pi$       (2)  $32\pi$       (3)  $16\pi$       (4) 16
18. The mean value of the function  $\sin^2 \omega t$  from  $t=0$  to  $t=2\pi/\omega$  is  
 (1)  $1/2$       (2)  $\omega/2$       (3)  $\omega^2/4$       (4) 1
19. The degree of the differential equation  $(x^3 y^m)^4 - 4x^2 (y')^8 + 6xy' - 10y = \cos 4x$  is  
 (1) 8      (2) 3      (3) 4      (4) 1
20. The differential equation of the family of circles with center at the origin is  
 (1)  $yy' + x = 0$       (2)  $xy + y' = 0$       (3)  $xy - y' = 0$       (4)  $y'' + x = 0$
21. The solution of  $\frac{dy}{dx} = \frac{x+y+1}{2x+2y+2}$  is  
 (1)  $2y = c$       (2)  $x-2y = c$   
 (3)  $y = 2x^2 + c$       (4)  $x^2 + y^2 = c^2$
22. The solution of  $\frac{dy}{dx} + \frac{2y}{x} = \frac{2\cos 2x}{x^2}$  is  
 (1)  $xy^2 = \cos 2x + c$       (2)  $xy = 4 \sin 2x + c$   
 (3)  $xy = 4 \cos 2x + c$       (4)  $x^2y = \sin 2x + c$
23. The solution of the equation  $(D^2 - 1)^2 y = 0$  is  
 (1)  $y = c_1 \cos x + c_2 \sin x + c_3 e^x + c_4 e^{-x}$       (2)  $y = (c_1 x + c_2) \sin x + (c_3 x + c_4) \cos x$   
 (3)  $y = c_1 + c_2 x + c_3 e^x + c_4 e^{-x}$       (4)  $y = (c_1 x + c_2) e^x + (c_3 x + c_4) e^{-x}$
24. The particular integral of the differential equation  $(D^4 - 1)y = 4 \sin x$  is  
 (1)  $\cos x$       (2)  $x^2 \cos x$       (3)  $x \sin x$       (4)  $\sin x$

25. The particular integral of the differential equation  $(D^2 - 4D + 4)y = 2e^x$  is  
 (1)  $2e^{2x}$       (2)  $x^2 e^{2x}$       (3)  $xe^{2x}$       (4)  $2xe^{2x}$
26. Given a matrix  $A = \begin{bmatrix} 1 & 0 & 0 \\ 2 & 3 & 4 \\ 5 & -6 & x \end{bmatrix}$  and if  $\det(A) = 48$ , the value of  $x$  is  
 (1) 0      (2) 4      (3) 7      (4) 8
27. If  $A$  and  $B$  are symmetric matrices of same order then  $(AB^T)^T =$   
 (1)  $AB$       (2)  $BA$       (3)  $1$       (4)  $-AB$
28. Which one of the following statements is FALSE.  
 (1) In a determinant the numbers of rows must be equal to the number of columns  
 (2) In a determinant interchange of rows into columns does not alter the value of the determinant  
 (3) In general, interchange of rows into columns and vice-versa produces the same matrix  
 (4) A determinant can be reduced to a single number
29. If  $A = \begin{bmatrix} 2 & 0 \\ 0 & 2 \end{bmatrix}$ , then  $A^5 =$   
 (1)  $5A$       (2)  $32$       (3)  $16A$       (4)  $32A$
30. If the matrix  $A$  is such that  $A \begin{bmatrix} -1 & 2 \\ 3 & 1 \end{bmatrix} = \begin{bmatrix} -4 & 1 \\ 7 & 7 \end{bmatrix}$ , then  $A =$   
 (1)  $\begin{bmatrix} 1 & -1 \\ 2 & 3 \end{bmatrix}$       (2)  $\begin{bmatrix} 1 & 1 \\ -2 & 3 \end{bmatrix}$       (3)  $\begin{bmatrix} 3 & 1 \\ -2 & 1 \end{bmatrix}$       (4)  $\begin{bmatrix} -1 & 1 \\ 2 & 3 \end{bmatrix}$
31. If  $\frac{15x+18}{(2+x)(1-x)} = \frac{-4}{2+x} + \frac{A}{1-x}$ , then the value of  $A$  is  
 (1) 5      (2) -8      (3) 3      (4) 11

32. If  $\frac{10}{(x-3)(x^2+1)} = \frac{1}{x-3} - \frac{Bx+3}{x^2+1}$ , then  $B =$   
 (1) 0 (2) 1 (3) -1 (4) 2
33. The value of  $\cot(\pi/20) \cot(3\pi/20) \cot(5\pi/20) \cot(7\pi/20) \cot(9\pi/20) =$   
 (1) 2 (2) -2 (3) 1 (4) 0
34. If  $A+B = 45^\circ$ , then  $(1+\tan A)(1+\tan B) =$   
 (1) 0 (2) 1 (3) 3 (4) 2
35.  $(1+\cos 2\theta) / (\sin 2\theta) =$   
 (1)  $\tan 2\theta$  (2)  $\cot \theta$  (3)  $\cot^2 2\theta$  (4)  $\tan \theta$
36. If  $\tan(A/2) = t$ , then  $\sin A + \tan A =$   
 (1)  $4t/(1-t^4)$  (2)  $2t/(1+t^4)$  (3)  $(1+t)/(1-t)$  (4)  $(1-t)/(1+t)$
37. The minimum value of  $3 \sin x + 4 \cos x + 5$  is  
 (1) 5 (2) 10 (3) -5 (4) 0
38. If  $\cos x + \cos y = 1/3$ , and  $\sin x + \sin y = 1/4$ , then  $\tan(x+y)/2 =$   
 (1)  $7/12$  (2)  $1/12$  (3)  $3/4$  (4)  $4/3$
39. If  $3 \tan \theta = \cot \theta$ , then  $\theta =$   
 (1)  $n\pi$  (2)  $2n\pi + \pi/6$   
 (3) 0 (4)  $n\pi + \pi/6$  or  $n\pi - \pi/6$
40.  $\sin [\sin^{-1}(1/2) + \cos^{-1}(1/2)] =$   
 (1) 1 (2)  $1/2$  (3)  $2/3$  (4)  $3/4$
41. In a triangle ABC if  $a/\cos A = b/\cos B = c/\cos C$ , then the triangle is  
 (1) Isosceles (2) Equilateral  
 (3) Right angled (4) right angled isosceles

42. If the sides of triangle are 13, 14, 15 then the radius of the incircle is  
 (1) 14 (2) 8 (3) 4 (4) 2

43. The modulus of  $(7-24i)/(3+4i)$  is  
 (1) 15 (2) 20 (3) 10 (4) 5

44.  $(\sqrt{3}/2+i/2)^6 + (\sqrt{3}/2-i/2)^6 =$   
 (1) -2 (2) 2 (3) 1 (4) -1

45. If (3, -1) is the coordinates of one end of the diameter of the circle  $x^2+y^2-2x+4y=0$ , the coordinates of the other end is  
 (1) (-3, 1) (2) (-1, 3) (3) (3, 1) (4) (1, 3)

46. If the radius of the circle  $x^2+y^2-8x+10y+k=0$  is 7, then  $k =$   
 (1) 49 (2) -1 (3) -8 (4) 4

47. The length of x-intercept made by the circle  $x^2+y^2+4x-7y-12=0$  is  
 (1) 6 units (2) 12 units (3) 4 units (4) 8 units

48. Co-ordinates of the vertex of the parabola  $x^2-2ax+2ay=0$  is  
 (1)  $(a, a/2)$  (2)  $(0, a)$  (3)  $(a/2, 0)$  (4)  $(0, -a)$

49. The eccentricity of the ellipse  $4x^2+9y^2=36$  is  
 (1) 2 (2) 3 (3)  $3/2$  (4)  $\sqrt{5}/3$

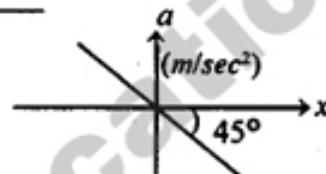
50. The equation of the hyperbola whose focus is  $(4, 0)$ , directrix is the line  $4x=9$  and with eccentricity  $4/3$  is  
 (1)  $x^2-7y^2=42$  (2)  $7x^2-y^2=63$  (3)  $x^2+7y^2=42$  (4)  $x^2-81y^2=24$

## PHYSICS

51. From the top of a tower of height  $39.2\text{m}$  a stone is thrown vertically up with a velocity of  $9.8\text{m}^{-1}\text{ sec}$ . How long will take to reach the ground.  
(1) 1 sec      (2) 2 sec      (3) 3 sec      (4) 4 sec
52. A body of mass 5 kgs moving along a straight line is accelerated from  $4\text{ms}^{-1}$  to  $8\text{ ms}^{-1}$  with the application of a force of  $10\text{N}$  in the same direction. Then the workdone by the force is  
(1) 120 Joules      (2) 60 Joules      (3) 240 Joules      (4) 30 Joules
53. A car without passengers moving with certain velocity on a travel ground can be stopped in a distance of 10m. If the passengers add 25% of its weight, its stopping distance for the same braking force and velocity is (ignore friction) \_\_\_\_\_  
(1) 15 m      (2) 10 m      (3) 7.5 m      (4) 12.5 m
54. In S.H.M, there is always a constant ratio between the displacement of the body and its \_\_\_\_\_.  
(1) Velocity      (2) Acceleration  
(3) Mass of the particle      (4) All of the above
55. When the amplitude of oscillation of a particle in S.H.M is increased to two times, the time period \_\_\_\_\_  
(1) Is doubled      (2) Is halved  
(3) Is unaltered      (4) Increased to  $\sqrt{2}$  times
56. A hole is drilled along the diameter of the earth and pen is dropped into it. The time taken by the pen in reaching the other end of the earth is \_\_\_\_\_  
(1) 84 min      (2) 42 min      (3) 21 min      (4) 102 min

57. A simple pendulum is vibrating in an evacuated chamber \_\_\_\_\_  
 (1) Come to rest eventually  
 (2) Oscillate forever with the same amplitude and frequency  
 (3) Oscillate with same frequency but amplitude will decrease with time  
 (4) Oscillate with same amplitude but frequency will decrease with time

58. Acceleration displacement graph of a particle executing S.H.M is as shown in given figure. The time period of its oscillation is (in sec) \_\_\_\_\_



- (1)  $\pi/2$  (2)  $2\pi$  (3)  $\pi$  (4)  $\pi/4$

59. Water is used in car radiators as coolant because of \_\_\_\_\_

- (1) Its density is more (2) High thermal conductivity  
 (3) High specific heat (4) Free availability

60. A glass of water contains ice cubes floating on it. When all ice melts the level of water in the glass \_\_\_\_\_

- (1) Increases (2) Decreases  
 (3) Remains the same (4) Doubled

61. When a gas is supplied 'dQ' heat, it performs a work 'dW'. The increase in its internal energy 'dU' is \_\_\_\_\_

- (1)  $dU = dQ + dW$  (2)  $dU = dQ - dW$  (3)  $dQ = dW - dU$  (4)  $dU = dQ - dW/2$

62. Heat given to a system is 35 joules and work done by the system is 15 joules. The change in the internal energy of the system will be \_\_\_\_\_

- (1) -50 J (2) 20 J (3) 30 J (4) 50 J

63. For a monoatomic gas the ratio of their specific heats  $\frac{C_p}{C_v}$  is  
 (1) 1.3      (2) 1.4      (3) 2      (4) 1.66
64. A stone is hung from a sonometer wire. If the stone is immersed in water the fundamental frequency \_\_\_\_\_  
 (1) Increase      (2) Decreases  
 (3) Remains same      (4) Become erratic
65. In an optical fiber, the refractive index of the core and cladding are  $n_1$  and  $n_2$  respectively. The numerical aperture of the fiber is  
 (1)  $n_1 - n_2$       (2)  $n_1^2 - n_2^2$       (3)  $\frac{n_1^2}{n_2^2}$       (4)  $\sqrt{n_1^2 - n_2^2}$
66. The dimensional formula of the physical quantity torque is represented by  
 (1)  $M^2 L^2 T^{-2}$       (2)  $ML^2 T^{-2}$       (3)  $ML^3 T^{-2}$       (4)  $MLT^{-2}$
67. Which of the following is SI unit of energy?  
 (1) Joule      (2) Dyne      (3) Poundal foot      (4) Newton
68. The component of vector is \_\_\_\_\_  
 (1) Always less than its magnitude      (2) Always greater than its magnitude  
 (3) Always equal to its magnitude      (4) Greater than or equal to its magnitude
69. A bus moves over a straight level road with a constant acceleration. A boy in the bus drops a ball out side. The acceleration of the ball w.r.t bus and the earth are respectively \_\_\_\_\_.  
 (1)  $\sqrt{a^2 + g^2}, g$       (2)  $g, \sqrt{a^2 + g^2}$       (3)  $a, g$       (4)  $g, a$

70. An object falls freely from rest for 5 seconds. Find the distance travelled by the object in the last 2 seconds. (assume  $g = 10 \text{ m}^2 \text{ sec}^{-2}$ )  
 (1) 125 m      (2) 45 m      (3) 60 m      (4) 80 m
71. The acceleration of a moving body can be found from \_\_\_\_\_  
 (1) Area under velocity-time graph      (2) Area under distance-time graph  
 (3) Slope of the velocity-time graph      (4) Slope of distance-time graph
72. A hydrogen balloon released on the moon  
 (1) Move up with acceleration  $9.8 \text{ ms}^{-2}$   
 (2) Move down with acceleration  $9.8 \text{ ms}^{-2}$   
 (3) Move down with acceleration  $9.86 \text{ ms}^{-2}$   
 (4) Neither move up nor move down
73. Theoretically, which of the following are best lubricants \_\_\_\_\_  
 (1) Solids      (2) Liquids  
 (3) Gases      (4) All have the same lubricating capacity
74. A body freely falling from rest has a velocity  $v$  after it falls through a distance  $h$ . The distance it has to fall down further, for its velocity to become doubled is \_\_\_\_\_  
 (1)  $4h$       (2)  $3h$       (3)  $2h$       (4)  $h$
75. The maximum speed of a car on a curved path of radius ' $r$ ' and the coefficient of friction ( $\mu$ ) is \_\_\_\_\_  
 (1)  $\sqrt{\mu g/r}$       (2)  $\sqrt{\mu gr}$       (3)  $\sqrt{\mu r/g}$       (4)  $\sqrt{gr/\mu}$

## **CHEMISTRY**

76. The concentration of a  $1.0 \times 10^{-3}$  M solution of calcium nitrate in water is  
(1) 1.64 ppm (2) 164 ppm  
(3) 32.8 ppm (4) 100 ppm

77. Which of the following can be the best for sterilization of water?  
(1)  $N_2$  (2) Chlorine  
(3) Lime (4)  $Na_2CO_3$

78. A zinc rod half immersed in a beaker containing water  
(1) Corrodes fastest at the top  
(2) Does not corrode at all  
(3) Corrodes fastest at the water-metal boundary  
(4) Corrodes fastest at the bottom

79. The effect of sulphur dioxide on iron is to  
(1) Decrease the rate of corrosion  
(2) Increase the rate of corrosion  
(3) First decrease and then increase the rate of corrosion  
(4) Bring no change in its corrosion

80. Formaldehyde is manufactured by  
(1) Dehydrogenation of methanol over a catalyst at high temperature  
(2) Hydrolysis of urea followed by addition of  $H_2$   
(3) Dehydrogenation of formic acid  
(4) decarboxylation of acetic acid

B

81. Match the following and indicate the best combination :

a) Bakelite	i) Made from ethylbenzene
b) PVC	ii) Thermoset polymer
c) Natural rubber	iii) Made from 1-chloroethylene
d) Styrene	iv) Polymer of isoprene unit

- |                                |                                 |
|--------------------------------|---------------------------------|
| (1) $(a+iii)(b+iv)(c+i)(d+ii)$ | (2) $(a+ii)(b+iii)(c+iiv)(d+i)$ |
| (3) $(a+i)(b+iv)(c+iii)(d+ii)$ | (4) $(a+iv)(b+ii)(c+i)(d+iii)$  |

82. Phenol is manufactured by

- (1) Heating benzene with NaOH
  - (2) Hydrolysis of chlorobenzene with KOH
  - (3) Oxidation of cumene to its hydroperoxide followed by hydrolysis
  - (4) Reduction of benzoic acid with hydrogen over a catalyst

83. Natural gas is

- (1) A mixture of  $C_1$ - $C_4$  hydrocarbons
  - (2) Made by cracking of gasoline
  - (3) A mixture of  $C_4$ - $C_6$  hydrocarbons
  - (4) Made from bio-gas by compression followed by distillation

84. Which of the following is responsible for global-warming?



85. Which of the following is a carcinogen?

- (1)  $\text{SO}_2$  (2) Benzene  
(3)  $\text{NO}_x$  (4) Toluene

86. The theory that no two electrons in an atom can have identical values of the four quantum numbers is known as \_\_\_\_\_.  
(1) Hund's rule (2) Bohr's theory  
(3) Aufbau's principle (4) Pauli's principle

87. The angular momentum of an electron revolving round the nucleus in K shell is given by \_\_\_\_\_.  
(1)  $h/2\pi$  (2)  $h^2/2\pi$  (3)  $\pi/2h$  (4)  $h/2\pi^2$

88. The valency electronic configuration of chlorine atom (At.No. 17) is \_\_\_\_\_.  
(1)  $3s^23p^34s^2$  (2)  $3s^23p^5$  (3)  $3s^13p^6$  (4)  $3s^13p^33d^3$

89. Which one of the following molecule has the highest bond strength?  
(1)  $O_2$  (2)  $HCl$  (3)  $N_2$  (4)  $H_2$

90. Cesium chloride is readily soluble in \_\_\_\_\_.  
(1) Ethanol at  $0^\circ C$  (2) Water at room temperature  
(3) Xylene at  $100^\circ C$  (4) Chloroform at  $65^\circ C$

91. 1.43 gms of crystalline sodium carbonate (M.w 286) were dissolved in water and made up to 100 ml in a standard flask. 10 ml of this solution were pipetted out into another flask and made up to 100 ml with distilled water. The normality of the final solution is \_\_\_\_\_.  
(1) 0.01N (2) 0.1N (3) 0.05N (4) 0.005N

92. Sodium metal and sodium ions have \_\_\_\_\_.  
(1) the same number of electrons (2) the same reactivity with water  
(3) the same number of neutrons (4) different number of protons

93. Which of the following is a non-aprotic & non-polar solvent?  
(1) Chloroform (2) n-Butanol  
(3) Dimethyl formamide (4) Diethyl ether

94. The pH of an aqueous solution of KOH was found to be 10.0. Then its pOH \_\_\_\_\_  
(1) 10.0 (2) 4.0 (3) 14.0 (4) 3.0
95. Which one of the following is a Lewis base?  
(1) Aq.  $MgCl_2$  (2) Anh.  $AlCl_3$   
(3) Pyridine (4) Lithium hydroxide
96. An aqueous solution of which of the following compounds will conduct electricity?  
(1) Urea (2) D-Glucose  
(3) Ethylene glycol (4) Propionic acid
97. Given that  $E^\circ$  for  $Ni/Ni^{+2} = (-) 0.38V$  and  $E^\circ$  for  $Cu/Cu^{+2} = (+) 0.34V$ , the standard emf of the cell  $Ni / Ni^{+2} // Cu^{+2} / Cu$  is \_\_\_\_\_.  
(1) 0.72 V (2) 0.02 V  
(3) (-) 0.04 V (4) (-) 0.72 V
98. A solution of silver nitrate was electrolyzed using Pt electrodes & a DC current of strength 2 amperes for 9.65 hrs. The weight of silver (At. Wt. 108) deposited was \_\_\_\_\_.  
(1) 2.16 gm (2) 1.08 gm  
(3) 108 gm (4) 0.432 gm
99. Which of the following metal ions will undergo fastest reduction?  
(1)  $K^+$  (2)  $Al^{+3}$  (3)  $Cd^{+2}$  (4)  $Ag^+$
100. The adsorbent used in Permutit process is  
(1) Sodium aluminostannate (2) Potassium aluminozincate  
(3) Sodium aluminosilicate (4) Potassium zincostannate

## COMPUTER SCIENCE AND ENGINEERING

101. \_\_\_\_\_ register keeps track of next executable instruction.

- (1) AR      (2) XR      (3) PC      (4) AC

102. Cache memory works on the principle of \_\_\_\_\_

- (1) Locality of Data      (2) Locality of Reference  
(3) Locality of Memory      (4) Locality of Data and memory

103. Which of the following interrupts are unmaskable.

- (1) RST 7.5      (2) TRAP      (3) RST 5.5      (4) INTR

104. The best data structure to check whether an arithmetic expression has balanced parentheses is

- (1) Stack      (2) Queue      (3) Tree      (4) Graph

105. The time complexity of the following C function is (assume  $n > 0$ ) \_\_\_\_\_

```
int recursive (int n)
{
    if (n == 1)
        return 1;
    else
        return (recursive (n-1) + recursive (n-1));
}
```

- (1)  $2^{n+1}$       (2)  $2^n$       (3)  $n^2$       (4)  $\log n$

106. Which combination of the integer variables  $x$ ,  $y$  &  $z$  makes the variable "a" get the value 4 in the following expression?

$$a = (x > y) ? ((x > z) ? x : z) : ((y > z) ? y : z).$$

- (1)  $x=3, y=4, z=2$       (2)  $x=6, y=5, z=3$   
(3)  $x=6, y=3, z=5$       (4)  $x=5, y=3, z=4$

107. \_\_\_\_\_ traversal returns numbers inserted into a BST in ascending order.

- (1) In order      (2) Pre order      (3) Post order      (4) Con-pre order

108. The result of following code is \_\_\_\_\_

void main ()

{

    int const \*p=5;  
    printf("%d", ++(\*p));

}

- (1) 5      (2) 6      (3) Compiler error      (4) Runtime error

109. The following C-function computes of m, n (let  $n \geq m$ )

int f(n, m)

{

    if (n %m==0)  
        return m;  
    n=n %m;  
    return f(m, n);

}

- (1) LCM      (2) Factors      (3) GCD      (4) Multiples

110. The worst case time complexity of Merge Sort \_\_\_\_\_

- (1)  $O(n^2)$       (2)  $O(n \log n)$       (3)  $O(\log n)$       (4)  $O(n)$

111. Which of the following control structure tests the condition at the end.

- (1) While      (2) Do-While      (3) For      (4) Switch

112. Which of the following is not a dynamic memory allocation function.

- (1) Malloc ( )      (2) Calloc ( )  
(3) Realloc ( )      (4) Alloc ( )

113. The default storage class of local variables is \_\_\_\_\_  
(1) Auto      (2) Extern      (3) Register      (4) Static

114. Round robin scheduling is essentially the preemptive version of \_\_\_\_\_  
(1) FIFO      (2) Shortest job first  
(3) Shortest remaining      (4) Longest time first

115. The mechanism that bring a page into memory only when it is needed is called \_\_\_\_\_  
(1) Segmentation      (2) Fragmentation  
(3) Demand Paging      (4) Page Replacement

116. Which of the following disk scheduling techniques has a drawback of starvation?  
(1) SCAN      (2) SSTF      (3) FCFS      (4) LIFO

117. Virtual memory is \_\_\_\_\_  
(1) An extreme large main memory  
(2) An extreme large secondary memory  
(3) An illusion of extreme large main memory  
(4) An extension of secondary memory

118. The essential content in each entry of a page table is  
(1) Virtual page number  
(2) Page frame number  
(3) Both virtual page number and page frame number  
(4) Access right information

119. Which of the following algorithm is the solution of critical-section problem which contains concurrent processes?  
(1) SJF algorithm      (2) Lamport's bakery algorithm  
(3) Leu algorithm      (4) Banker's algorithm

120. To avoid race condition, the number of processes may be simultaneously inside their critical section is \_\_\_\_\_

- (1) 1 (2) 2 (3) 16 (4) 32

121. The LRU algorithm \_\_\_\_\_

- (1) Pages out pages that have been used recently  
(2) Pages out pages that have not been used recently  
**(3) Pages out pages that have been least used recently**  
(4) Pages out pages that used last in the given

122. Thrashing can be avoided if \_\_\_\_\_

- (1) The pages, belonging to the working set of program, are in the main memory**  
(2) The speed of I/O process is increased  
(3) The speed of CPU is increased  
(4) The capacity of memory is decreased

123. In which of storage placement strategies a program is placed in the largest available hole in the memory.

- (1) Best fit (2) First fit (3) Large fit **(4) Worst fit**

124. A table emp contains the values 10, 20, 30, null, null for a column col1. What is the result for following query: SELECT count (col1) FROM emp;

- (1) 3 **(2) 5** (3) 4. (4) 2

125. Which of the following is aggregate function in SQL?

- (1) LTRIM() (2) TO\_NUMBER()  
(3) SUM() (4) LENGTH()

126. In E-R diagrams relationship is represented with \_\_\_\_\_ symbol.

- (1) Diamond (2) Rectangle (3) Doubled lines (4) Circle

127. The operation which combines results from two or more relations is \_\_\_\_\_

- (1) Join (2) Combine  
(3) Concatenation (4) Add

128. Which of the following is not a property of transactions?

- (1) Atomicity (2) Concurrency (3) Isolation (4) Durability

129. Find the ODD data type out.

- (1) VARCHAR2 (2) RECORD (3) BOOLEAN (4) RAW

130. DROP is a \_\_\_\_\_ statement in SQL.

- (1) Query (2) Embedded SQL (3) DDL (4) DCL

131. SQL query to return the number of records in the "Persons" table is \_\_\_\_\_

- (1) Select COUNT (\*) From Persons (2) Select \* From Persons  
(3) Select SUM (\*) From Persons (4) Select AVG (\*) From Persons

132. The rule that a value of a foreign key must appear as a value of some specific table is called a \_\_\_\_\_ constraint.

- (1) Referential (2) Integrity  
(3) Combine (4) Primary

133. A relation is in \_\_\_\_\_ normal form if an attribute of a composite key is dependent on an attribute of other composite key.

- (1) 3NF (2) 2NF (3) BCNF (4) 1NF

134. PCB represents for \_\_\_\_\_

- (1) Process Control Block (2) Program Control Block  
(3) Process Count Block (4) Program Count Block

135. In which of the following memory management technique the problem of Internal fragmentation is present  
(1) Segmentation (2) Paging  
(3) Both paging and segmentation (4) Neither paging nor segmentation

136. Which of the following is used for modulation and demodulation?  
(1) Modem (2) Protocols (3) Gateway (4) Multiplexer

137. Which of the following TCP/IP protocol is used for transferring electronic mail messages from one machine to another?  
(1) FTP (2) SNMP (3) SMTP (4) RPC

138. Which of the following device is used to connect two systems, especially if the systems use different protocols?  
(1) Hub (2) Bridge (3) Gateway (4) Repeater

139. The slowest transmission speeds are those of  
(1) Twisted-pair wire (2) Coaxial cable  
(3) Fiber-optic cable (4) Microwaves

140. An error-detecting code inserted as a field in a block of data to be transmitted is known as  
(1) Frame check sequence (2) Error detecting code  
(3) Checksum (4) Flow control

141. Error detection at a data link level is achieved by  
(1) Bit stuffing (2) Cyclic redundancy codes  
(3) Hamming codes (4) Equalization

142. Which IP address class has few hosts per network?  
(1) D (2) C (3) B (4) A

143. Which of the following specifies the network address and host address of the computer?



144. Routing tables of a router keeps track of

- (1) MAC Address Assignments
  - (2) Port Assignments to network devices
  - (3) Distribute IP address to network devices
  - (4) Routes to use for forwarding data to its destination

145. Which of the following can be Software?

- (1) Routers      (2) Firewalls      (3) Gateway      (4) Modems

146. The default access specifier is

- (1) Public      (2) Private      (3) Protected      (4) Friend

147. When a base class is privately inherited by a derived class, public members of the base class become \_\_\_\_\_ members of the derived class.

- (1) Private      (2) Public      (3) Protected      (4) Friend

148. C++ uses a unique keyword called \_\_\_\_\_ to represent an object that invokes a member function.

- (1) This      (2) New      (3) Delete      (4) Malloc

149. The wrapping up of data and functions into a single unit is known as

- (1) Polymorphism (2) Abstraction (3) Encapsulation (4) Inheritance

150. If class  $A$  is friend of class  $B$  then class  $B$  is

- (1) Automatically friend of  $A$       (2) Automatically friend of derived class  $A$   
 (3) Not automatically friend of  $A$       (4) Automatically friend of derived class of  $B$

151. The operator that can not be overloaded \_\_\_\_\_  
(1) ++ (2) :: (3) () (4) --
152. Which of the following is not constructor?  
(1) Friend constructor (2) Copy constructor  
(3) Parameterized constructor (4) Default constructor
153. The declaration of pure virtual function is \_\_\_\_\_  
(1) Virtual void display () {0}; (2) Virtual void display = 0;  
(3) Void display () = 0; (4) Virtual void display () = 0;
154. Which inheritance is not supported by C++  
(1) Multilevel (2) Single (3) Hybrid (4) Multiple
155. The legal access to a class data members using this pointer \_\_\_\_\_  
(1) this->x (2) this.x (3) \*this.x (4) \*this(x)
156. The memory allocated in microprocessor 8086 is  
(1) 100 Kb (2) 100 MB (3) 1 MB (4) 1 KB
157. The physical Address of 8086 microprocessor consists of \_\_\_\_\_ Bits.  
(1) 4 (2) 8 (3) 16 (4) 20
158. What is minimum size of a logical segments in 8086 of size 64 Kb.  
(1) 4 (2) 8 (3) 16 (4) 20
159. CLD instruction is used in \_\_\_\_\_ instructions.  
(1) LOOP (2) Branch (3) String (4) Flag
160. No. of Addressing Modes Present in 8086 Microprocessor are \_\_\_\_\_  
(1) 4 (2) 8 (3) 7 (4) 16

161. STD is abbreviated as

- |                          |                        |
|--------------------------|------------------------|
| (1) Store trap flag      | (2) Set trap flag      |
| (3) Store detection flag | (4) Set direction flag |

162. Flags present on 8086 Micro processor are \_\_\_\_\_

- |       |       |        |        |
|-------|-------|--------|--------|
| (1) 8 | (2) 9 | (3) 10 | (4) 11 |
|-------|-------|--------|--------|

163. In 8086 microprocessor, which of the following interrupt has the highest priority.

- |               |          |         |              |
|---------------|----------|---------|--------------|
| (1) Over flow | (2) DIV0 | (3) NMI | (4) Type 255 |
|---------------|----------|---------|--------------|

164. ALE Stands for

- |                              |                                 |
|------------------------------|---------------------------------|
| (1) Accumulator Latch enable | (2) Auto latch enable           |
| (3) Address latch enable     | (4) Address & Data latch enable |

165. 8255 is called as

- |            |         |         |          |
|------------|---------|---------|----------|
| (1) Timers | (2) DMA | (3) PPI | (4) None |
|------------|---------|---------|----------|

166. Which of the following is not the method of Thread class?

- |           |          |         |           |
|-----------|----------|---------|-----------|
| (1) Start | (2) Stop | (3) Run | (4) Sleep |
|-----------|----------|---------|-----------|

167. Which of the following event is generated when a scroll bar is manipulated?

- |                      |                      |
|----------------------|----------------------|
| (1) Action Event     | (2) Adjustment Event |
| (3) Contatiner Event | (4) Item Event       |

168. Which of the following is not an AWT class?

- |           |           |            |            |
|-----------|-----------|------------|------------|
| (1) Image | (2) Event | (3) Cursor | (4) Applet |
|-----------|-----------|------------|------------|

169. If a class includes an interface but does not fully implement the methods defined by that interface, then that class must be declared as \_\_\_\_\_

- |              |            |           |            |
|--------------|------------|-----------|------------|
| (1) Abstract | (2) Static | (3) Final | (4) Public |
|--------------|------------|-----------|------------|



178. Which of the following object is not an ASP component.

- |               |                  |
|---------------|------------------|
| (1) File axis | (2) Ad Rotator   |
| (3) Counter   | (4) Link counter |

179. Which user action will not generate a server-side event?

- |                  |                 |
|------------------|-----------------|
| (1) Mouse Move   | (2) Text Change |
| (3) Button Click | (4) Mouse click |

180. Which of the following control structure is not available in VB Script.

- |                       |                               |
|-----------------------|-------------------------------|
| (1) If statement      | (2) Nest if statement         |
| (3) Switch case shunt | (4) If-then-else if-statement |

181. Which of the following is used to increase the row height?

- |                  |                  |
|------------------|------------------|
| (1) Cell spacing | (2) Cell padding |
| (3) Row span     | (4) Col span     |

182. Which is the largest Heading Tag?

- |        |        |        |        |
|--------|--------|--------|--------|
| (1) H1 | (2) H3 | (3) H4 | (4) H6 |
|--------|--------|--------|--------|

183. Choose odd one tag of HTML?

- |           |        |        |          |
|-----------|--------|--------|----------|
| (1) Table | (2) Tr | (3) Td | (4) Form |
|-----------|--------|--------|----------|

184. HTML tag for text scrolling is \_\_\_\_\_

- |                        |                     |
|------------------------|---------------------|
| (1) <scroll> </scroll> | (2) <move></move>   |
| (3) <marque></marque>  | (4) <round></round> |

185. HTML tag for line break is \_\_\_\_\_

- |           |          |           |              |
|-----------|----------|-----------|--------------|
| (1) <br/> | (2) <p/> | (3) <br/> | (4) <break/> |
|-----------|----------|-----------|--------------|

186. If  $73_x$  (x-base system) is equal to  $54_y$  (y-base system), the possible values of x and y are:

- |           |            |           |           |
|-----------|------------|-----------|-----------|
| (1) 8, 16 | (2) 10, 12 | (3) 9, 13 | (4) 8, 11 |
|-----------|------------|-----------|-----------|

187. Consider the following Boolean function of four variables

$$f(w, x, y, z) = \sum(1, 3, 4, 6, 9, 11, 12, 14) \text{ the function is } \underline{\hspace{2cm}}$$

- (1) Independent of one variable      (2) Independent of two variables  
 (3) Independent of three variables      (4) Dependent on all the variables

188. In an *SR* latch made by cross coupling two NAND gates, if both *S* and *R* inputs are set to 0, then it will result in                   

- (1)  $Q=0, Q'=1$       (2)  $Q=1, Q'=0$       (3)  $Q=1, Q'=1$       (4) Indeterminate states

189. The minimum number of D flip-flops needed to design a mod-258 counter is                   

- (1) 9      (2) 8      (3) 512      (4) 258

190. How many 3-to-8-line decoders with an enable input are needed to construct a 6-to-64 line decoder without using any other logic gates?

- (1) 7      (2) 8      (3) 9      (4) 10

191. What will be the value of  $f = (x+y)(x'y')$  ?

- (1) 0      (2) 1      (3) x      (4) y

192. What is the minimum number of 2-input NAND gates used to perform the function of 2-input OR gate?

- (1) 2      (2) 3      (3) 4      (4) 6

193. The clear and preset inputs of the JK-flip flop are known as                   

- (1) Synchronous input      (2) Asynchronous input  
 (3) Directed input      (4) Re-directed input

194. Which of the following addressing modes are suitable for program relocation at run time?

- (1) Absolute addressing      (2) Direct addressing  
 (3) Relative addressing      (4) Indirect addressing

195. Swap space in the disk is used for \_\_\_\_\_  
(1) Saving temporary html pages      (2) Saving process data  
(3) Storing the super block      (4) Storing the device drivers
196. Name of the I/o scheduling algorithm that moves the head in one direction until all requests have been serviced and then reverse.  
(1) FCFS      (2) C-SCAN      (3) SCAN      (4) Greedy
197. How many 32K X 1 RAM chips are need to provide a memory capacity of 256 K-bytes?  
(1) 8      (2) 32      (3) 64      (4) 128
198. The cylinder skew problem is concerned with which of the following?  
(1) Semaphore      (2) Thrashing      (3) Interleaving      (4) Deadlock
199. Which of the following is a free space management technique.  
(1) Paging      (2) Bitmap  
(3) Segmentation      (4) Demand paging
200. MIMD stands for \_\_\_\_\_  
(1) Multiple instructions multiple data  
(2) Multiple instructions Memory data  
(3) Memory instructions multiple data  
(4) Memory instructions Memory data